



Atty. Dkt. No. 085874-0290

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Henry AZIMA et al.

Examiner: Unassigned

Title: RESONANT PANEL-FORM  
LOUDSPEAKER

Group Art Unit: Unassigned

Appl. No.: 09/752,830

Filing Date: January 3, 2001

**CLAIM FOR CONVENTION PRIORITY**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

The benefit of the filing date of the following prior foreign application filed in the following foreign country is hereby requested, and the right of priority provided in 35 U.S.C. § 119 is hereby claimed.

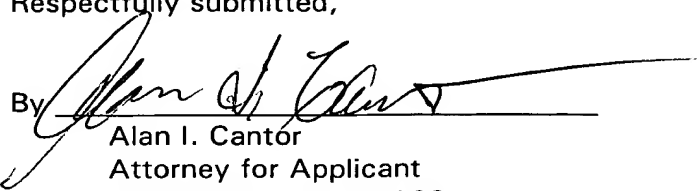
In support of this claim, filed herewith is a certified copy of said original foreign application:

- United Kingdom Patent Application No. 9814324.1, filed July 3, 1998
- United Kingdom Patent Application No. 9902578.5, filed February 6, 1999
- United Kingdom Patent Application No. 9902579.3, filed February 6, 1999
- United Kingdom Patent Application No. 9902581.9, filed February 6, 1999
- United Kingdom Patent Application No. 9902582.7, filed February 6, 1999
- United Kingdom Patent Application No. 9905038.7, filed March 5, 1999

Respectfully submitted,

Date MAY 31 2001  
FOLEY & LARDNER  
Washington Harbour  
3000 K Street, N.W., Suite 500  
Washington, D.C. 20007-5109  
Telephone: (202) 672-5570  
Facsimile: (202) 672-5399

By

  
Alan I. Cantor  
Attorney for Applicant  
Registration No. 28,163



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INVESTOR IN PEOPLE

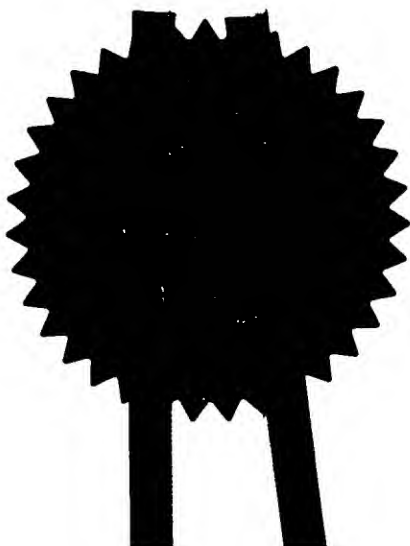
The Patent Office  
Concept House  
Cardiff Road  
Newport  
South Wales  
NP10 8QQ

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

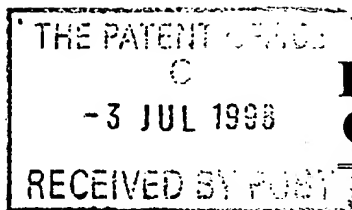


Signed

*W. Evans*

Dated 21 February 2001

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The  
Patent  
Office

03JUL98 E372776-6 D02824  
P01/7700 25.00 - 9814324.1

The Patent Office

Cardiff Road  
Newport  
Gwent NP9 1RH

## Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form).

1. Your Reference

P.5952

2. Patent application number

(The Patent Office will fill in this part)

**9814324.1**

**- 3 JUL 1998**

3. Full name, address and postcode of the or of each applicant (underline all surnames)

NEW TRANSDUCERS LIMITED  
Stonehill  
Huntingdon  
Cambridgeshire  
PE18 6ED  
G.B.

Patents ADP number (if you know it)

7133119003

If the applicant is a corporate body, give the country/state of its incorporation

G.B.

4. Title of the invention

LOUDSPEAKER

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

MAGUIRE BOSS  
5 Crown Street  
St. Ives  
Cambridgeshire  
PE17 4EB

Patents ADP number (if you know it)

00009191002

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day/month/year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application


Date of filing  
(day/month/year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

Yes

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body:)
- See note (d)

9. Enter the number of sheets for any of the following items you are filing with this form.

 not count copies of the same document

Continuation sheets of this form

Description 4

Claims(s)

Abstract

Drawing(s) 1 



10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (*Patents Form 7/77*)

Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

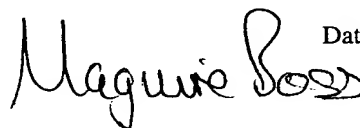
Any other documents  
(*please specify*)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Date : 02/07/98



MAGUIRE BOSS

12. Name and daytime telephone number of person to contact in the United Kingdom

P.A. MAGUIRE

Tel: 01480 301588

#### Warning

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#### Notes

- a) If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.
- b) Write your answers in capital letters using black ink or you may type them.
- c) If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- d) If you have answered 'Yes' Patents Form 7/77 will need to be filed.
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Patents Form 1/77

5

TITLE: LOUDSPEAKER

10

DESCRIPTION

15       The invention relates to loudspeakers and more particularly to panel-form loudspeakers.

          It is known to suggest driving the transparent face of a wristwatch to act as a buzzer or sounder i.e. to emit simple sound tones, e.g. to act as an alarm for the wearer  
20 of the wristwatch.

          It is among the objects of the invention to provide a transparent panel-form member which can be driven as a loudspeaker, e.g. to reproduce speech or music.

          According to the invention a loudspeaker comprises a  
25 panel-form member, at least a portion of which is transparent or translucent, and means driving the member to act as an acoustic radiator.

          The member may be rigid and may be of plastics or may

be of glass or other transparent material. Alternatively the member may be a flexible diaphragm, e.g. a stretched diaphragm.

The means driving the member may be a vibration  
5 exciter. More than one drive means may be provided. The  
or each vibration exciter may apply bending wave energy to  
the panel-form member to cause it to resonate to produce  
an acoustic output. The drive means may be mounted to an  
edge or marginal portion of the panel-form member, or a  
10 portion of the member outside its transparent portion.

The drive means may be coupled directly to the panel-form  
member or may be decoupled therefrom. Decoupling may be  
achieved by driving the panel-form member via a remotely  
positioned ultrasound or the like emitter or via an audio  
15 frequency conventional pistonic drive unit. Alternatively  
it may be possible to drive the panel-form member by a  
laser or the like of suitable intensity and frequency. The  
drive means may be electrodynamic. The drive means may be  
an inertial device or may be partly or fully grounded.

20 Alternatively the drive means may comprise a system  
of fine, and thus practically invisible, wires embedded in  
the transparent panel-form member in the manner of heating  
wires in the screen or windshield of an automobile.

The drive means may alternatively or additionally  
25 comprise an electret film, e.g. a transparent electret  
film. The electret film, if transparent, may be laminated  
onto the panel-form member.

The loudspeaker may be of the general kind described



in International patent application number WO 97/09842. Thus the loudspeaker may comprise a member capable of sustaining and propagating input vibrational energy by bending waves in at least one operative area extending  
5 transversely of thickness to have resonant mode vibration components distributed over said at least one area and having a vibration exciter mounted on said member to vibrate the member to cause it to resonate forming an acoustic radiator which provides an acoustic output when  
10 resonating.

One or more marginal portions of the panel-form member may be clamped or restrained. The whole periphery of the panel-form member may be mechanically clamped. The panel-form member may be mounted in means enclosing a face  
15 of the panel-form member whereby acoustic radiation from the said face is contained within the enclosure, in the manner of an infinite baffle loudspeaker.

The panel-form member may form the face of a visual display unit or the like, e.g. the outer transparent  
20 protective surface of or over the visual display screen of a lap-top or the like computer. A polymer-film liquid crystal display may be bonded or otherwise mounted on the panel-form member, whereby the loudspeaker and visual display functions are integrated.

25 The invention is diagrammatically illustrated, by way of example, in the accompanying drawings, with reference to the display screen lid of a lap-top computer and in which:-

Figure 1 is a front view of a lid of a lap-top computer, and

Figure 2 is a sectional view of the lid of Figure 1.

In the drawings it will be seen that the lid  
5 comprises a box-like structure, the open top of which is  
sealed by a transparent panel-form screen e.g. of polymer  
plastics sheet mounted on the lid by its marginal edges to  
form an enclosed space or cavity. One or more vibration  
exciters (two as shown) are attached to a marginal edge of  
10 the transparent panel to apply bending wave energy to the  
panel to cause it to resonate to provide an acoustic  
output and thus to form a loudspeaker, much as discussed  
in WO 97/09842. A liquid crystal display is disposed in  
the cavity to be visible through the transparent screen.

15 The exciter(s) will be energised by an electric  
signal provided by the computer (not shown) to provide a  
desired sound output.

The display screen of the computer thus forms the  
computer loudspeaker.

Fig 1

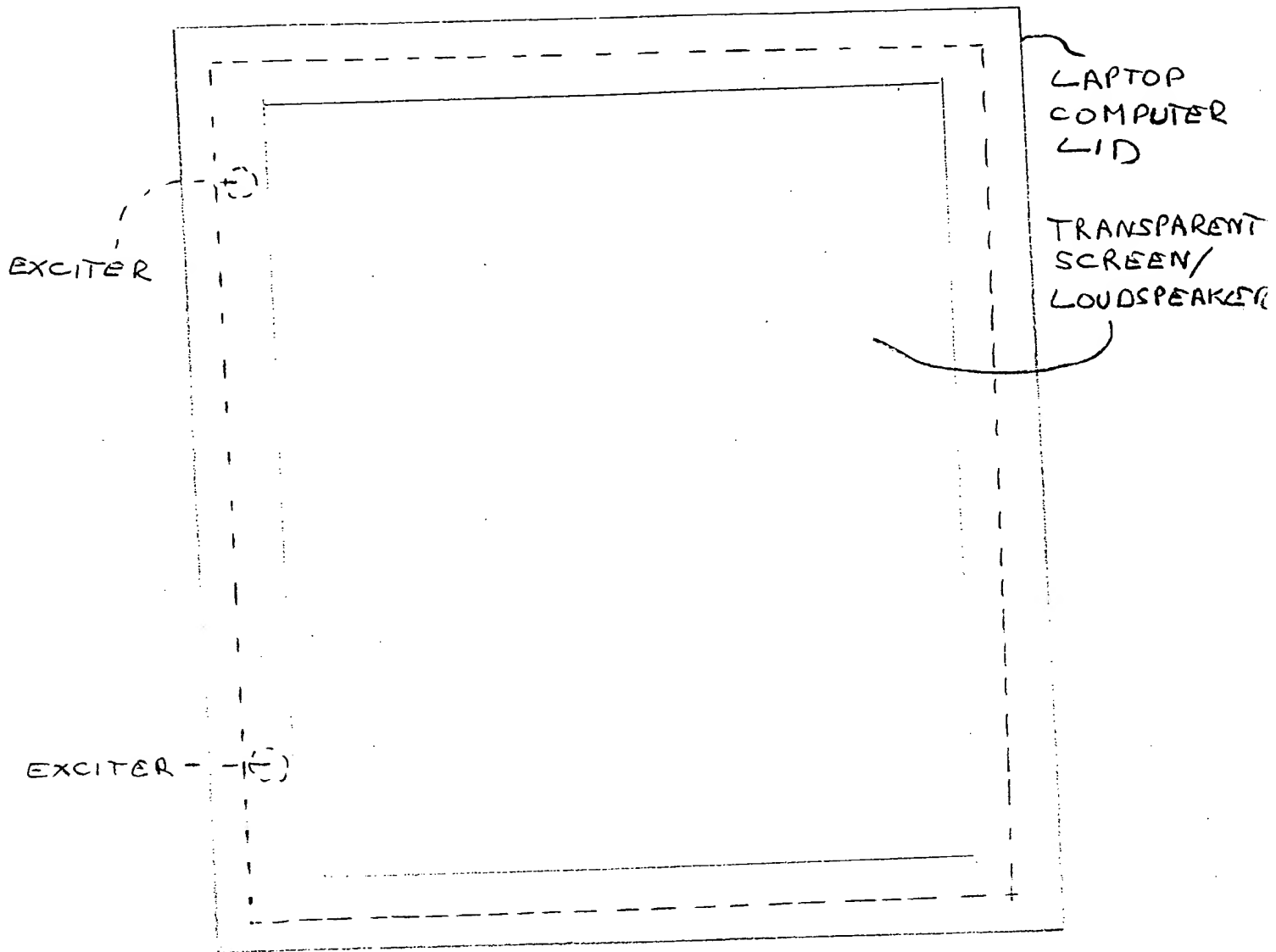
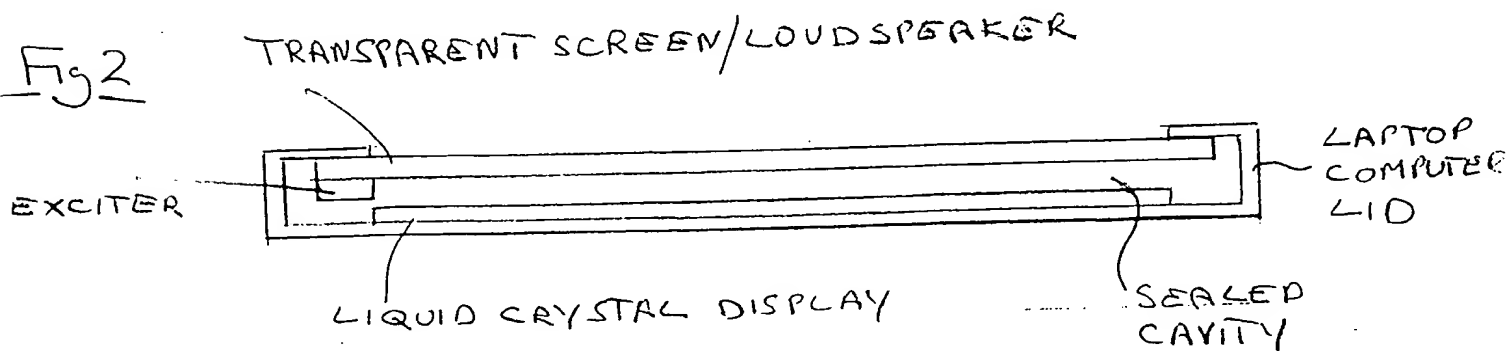


Fig 2



**FOLEY & LARDNER**  
3800 K ST., N.W.  
WASHINGTON, DC 20007

Serial No. 09/752,830

Filed: Jan. 3, 2001

Docket No. 085874/0290